

# **EXHIBIT 1**

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17 VLSI TECHNOLOGY LLC

18 UNITED STATES DISTRICT COURT  
19 NORTHERN DISTRICT OF CALIFORNIA  
20 SAN FRANCISCO DIVISION

21 VLSI TECHNOLOGY LLC.

22 Plaintiff,

23 v.

24 INTEL CORPORATION,

25 Defendant.

CASE NO.

**VLSI TECHNOLOGY LLC'S  
COMPLAINT FOR PATENT  
INFRINGEMENT**

**DEMAND FOR JURY TRIAL**



**INTRADISTRICT ASSIGNMENT**

7. Pursuant to Local Rule 3-2(c), Intellectual Property Actions are assigned on a district-wide basis.

**FACTUAL ALLEGATIONS**

8. Intel is one of the world's largest manufacturers of microprocessors for server, desktop, and mobile applications. For example, Intel's Core families of microprocessors (named i3, i5, and i7) are widely used in desktop and notebook computers made by Dell, HP, Acer, Lenovo, and others. Intel's Xeon families of microprocessors (named E3, E5, and E7) are advanced performance microprocessors used in server, network, and storage applications. Intel's Atom microprocessors are used in mobile phones and tablets. Intel's sales revenues were nearly \$60 billion in 2016. Most of that revenue was attributable to the sale of microprocessors. Intel also manufactures other electronic devices. For example, Intel is a major supplier of Field Programmable Gate Arrays (FPGAs).

9. VLSI owns a portfolio of over 160 patents issued in the U.S. and abroad covering a wide variety of technologies, including integrated circuit technology. The patents asserted in this lawsuit cover critical aspects of modern semiconductor and microprocessor technology used by all Intel microprocessors. Some of the patents cover key operational aspects of the Intel microprocessors, such as ways to operate a microprocessor to maximize performance or save power and battery life. Other patents cover novel microprocessor circuits that allow, for example, faster operation of memory and operation at lower power. Others allow the manufacture of smaller transistors or other features, or make the features more robust. Indeed, Intel's use of VLSI's patents is critical in making commercially successful products.

10. United States Patent No. 7,268,588 ("the '588 Patent"), entitled "Cascadable Level Shifter Cell" was duly and lawfully issued September 11, 2007. VLSI is the owner of all rights, title, and interest in the '588 Patent. A true and correct copy of the '588 Patent is attached hereto as Exhibit 1.

1           11.     United States Patent No. 7,675,806 (“the ’806 Patent”), entitled “Low voltage  
2 memory device and method thereof” was duly and lawfully issued March 9, 2010. VLSI is the  
3 owner of all rights, title, and interest in the ’806 Patent. A true and correct copy of the ’806 Patent  
4 is attached hereto as Exhibit 2.

5           12.     United States Patent No. 7,706,207 (“the ’207 Patent”), entitled “Memory with  
6 Level Shifting Word Line Driver and Method Thereof” was duly and lawfully issued April 27,  
7 2010. VLSI is the owner of all rights, title, and interest in the ’207 Patent. A true and correct  
8 copy of the ’207 Patent is attached hereto as Exhibit 3.

9           13.     United States Patent No. 7,709,303 (“the ’303 Patent”), entitled “Process for  
10 Forming an Electronic Device Including a Fin-Type Structure” was duly and lawfully issued May  
11 4, 2010. VLSI is the owner of all rights, title, and interest in the ’303 Patent. A true and correct  
12 copy of the ’303 Patent is attached hereto as Exhibit 4.

13           14.     United States Patent No. 8,004,922 (“the ’922 Patent”), entitled “Power Island  
14 With Independent Power Characteristics for Memory and Logic” was duly and lawfully issued  
15 August 23, 2011. VLSI is the owner of all rights, title, and interest in the ’922 Patent. A true and  
16 correct copy of the ’922 Patent is attached hereto as Exhibit 5.

17           15.     United States Patent No. 8,020,014 (“the ’014 Patent”), entitled “Method for Power  
18 Reduction and a Device Having Power Reduction Capabilities” was duly and lawfully issued  
19 September 13, 2011. VLSI is the owner of all rights, title, and interest in the ’014 Patent. A true  
20 and correct copy of the ’014 Patent is attached hereto as Exhibit 6.

21           16.     United States Patent No. 8,268,672 (“the ’672 Patent”), entitled “Method of  
22 Assembly and Assembly Thus Made” was duly and lawfully issued September 18, 2012. VLSI is  
23 the owner of all rights, title, and interest in the ’672 Patent. A true and correct copy of the ’672  
24 Patent is attached hereto as Exhibit 7.

25           17.     United States Patent No. 8,566,836 (“the ’836 Patent”), entitled “Multi-Core  
26 System on Chip” was duly and lawfully issued October 22, 2013. VLSI is the owner of all rights,  
27

1 title, and interest in the '836 Patent. A true and correct copy of the '836 Patent is attached hereto  
2 as Exhibit 8.

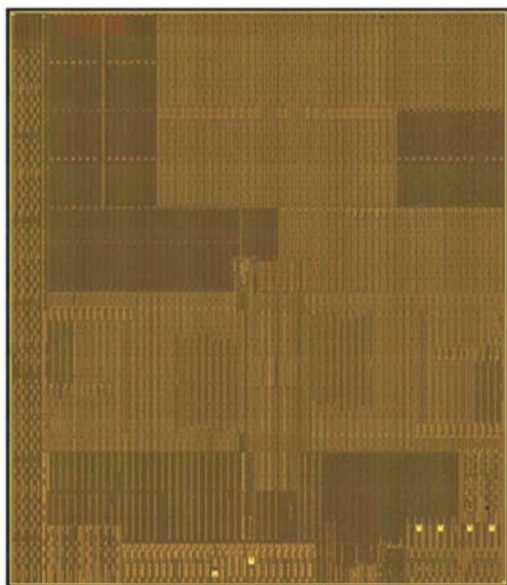
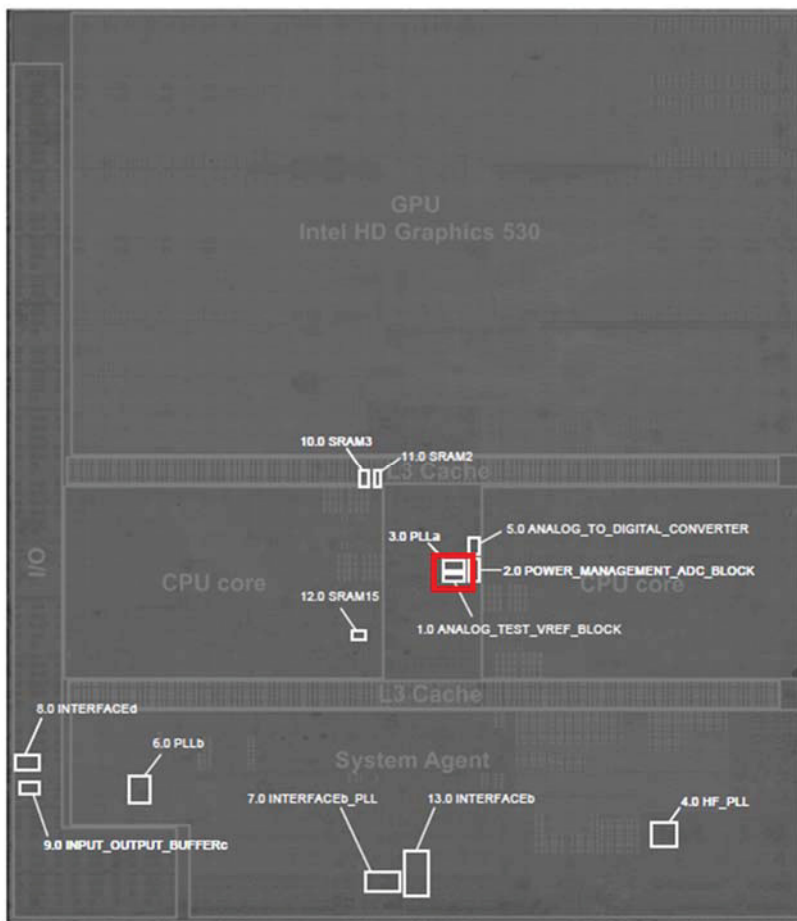
### 3 **FIRST COUNT**

#### 4 **(Infringement of U.S. Patent No. 7,268,588)**

5 18. U.S. Patent No. 7,268,588, entitled "Cascadable Level Shifter Cell," was filed on  
6 June 29, 2005. The inventors of the '588 Patent are Hector Sanchez, Carlos A. Greaves, Jim P.  
7 Nissen, and Xinghai Tang. A true and correct copy of the '588 Patent is attached hereto as Exhibit  
8 1. The '588 Patent is directed to novel circuitry solutions for shifting between levels of different  
9 voltage with improved noise immunity.

10 19. Intel makes, uses, sells, offers to sell, and/or imports Intel Core i3, i5, and i7  
11 microprocessors; Xeon E3, E5, and E7 microprocessors; Atom microprocessors, and other Intel  
12 microprocessors that incorporate the infringing features described below (collectively, "the '588  
13 Accused Products"), including but not limited to the Intel i3-6300 Core Processors. The '588  
14 Accused Products infringe one or more of the claims of the '588 Patent, including but not limited  
15 to claim 1.

16 20. To the extent the preamble of claim 1 of the '588 Patent is limiting, the '588  
17 Accused Products comprise a level shifter circuit. For example, the '588 Accused Products  
18 contain multiple level shifter circuits, including at least the level shifter circuit located in  
19 components (red) of the Intel i3-6300 Core Processors (pictured below in an excerpt from a  
20 reverse engineering report). This level shifter circuit is part of the integrated circuitry for the Intel  
21 i3-6300 Processors. Each of the '588 Accused Products include level shifter circuits in the same  
22 or similar infringing manner as the Intel i3-6300 Core Processors as described below (collectively  
23 "Accused Level Shifter Circuits").



1           21.     The '588 Accused Products comprise a first circuit, responsive to an input signal,  
2     that switches first and second nodes to opposite states within a first voltage range between first  
3     and second supply voltages. For example, the Accused Level Shifting Circuits found in the Intel  
4     i3-6300 Core Processors include a first circuit which is made up of several metal oxide  
5     semiconductor (MOS) transistors and various electrical connections. The first circuit has two  
6     inputs that are connected to two supply voltages and two outputs (the first and second nodes). The  
7     MOS transistors in the first circuit act as inverters and switch the first and second nodes (i.e., the  
8     two outputs of the first circuit) to opposite states within a first voltage range defined by first and  
9     second supply voltages (i.e., the voltages applied to the two inputs).

10           22.     The '588 Accused Products comprise a protection layer which couples said first  
11     and second nodes to third and fourth nodes via first and second isolation paths, respectively,  
12     wherein said first and second isolation paths keep said first and second nodes within said first  
13     voltage range and keep said third and fourth nodes within a second voltage range. For example,  
14     the Accused Level Shifting Circuits found in the Intel i3-6300 Core Processors include at least two  
15     isolation paths. These isolation paths each comprise a group of MOS transistors, and together,  
16     they make up the protection layer. The first and second nodes are inputs to a second circuit  
17     (discussed below), and the third and fourth nodes are outputs from the second circuit. The third  
18     and fourth nodes operate within a different voltage range from the first and second nodes. The  
19     protection layer isolates the first voltage range (the voltage between the first and second nodes)  
20     from the second voltage range (the voltage between the third and fourth nodes) and keeps them  
21     within their respective voltage ranges. The first and second nodes are coupled to the third and  
22     fourth nodes by means of the protection layer of MOS transistors.

23           23.     The '588 Accused Products comprise a second circuit that switches said third and  
24     fourth nodes to opposite states within said second voltage range between third and fourth supply  
25     voltages in response to switching of said first and second nodes. For example, the Accused Level  
26     Shifting Circuits found in the Intel i3-6300 Core Processors include a second circuit, which  
27     includes groups of MOS transistors that act as inverter circuits that switch the third and fourth



1 nodes (the outputs of the second circuit) to opposite states in response to the behavior of the first  
2 circuit, which as described previously, involves switching the states of first and second nodes in  
3 response to an input signal.

4       24.     The '588 Accused Products' second circuit is comprised of a first inverter having  
5 an input coupled to said fourth node, and output coupled to said third node and supply inputs  
6 coupled between said third and fourth supply voltages. For example, the Accused Level Shifting  
7 Circuits found in the Intel i3-6300 Core Processors have at least two inverters made of groups of  
8 MOS transistors. These two inverters are connected as required by claim 1: one of the inverters  
9 (the first inverter) has an input coupled to the fourth node, an output coupled to the third node, and  
10 supply inputs coupled between the third and fourth node.

11       25.     The '588 Accused Products' second circuit is further comprised of a second  
12 inverter having an input coupled to said third node, an output coupled to said fourth node and  
13 supply inputs coupled between said third and fourth supply voltages. As discussed above, the  
14 Accused Level Shifting Circuits found in the Intel i3-6300 Core Processors include a second  
15 inverter made up of a group of MOS transistors that are connected as required by the claim: one  
16 input is coupled to the third node; one output is coupled to the fourth node; and supply inputs are  
17 coupled between third and fourth supply voltages.

18       26.     By making, using, testing, offering for sale, selling, and/or importing integrated  
19 circuits, including but not limited to the '588 Accused Products, Intel has injured VLSI and is  
20 liable to VLSI for directly infringing one or more claims of the '588 Patent, including at least  
21 claim 1, pursuant to 35 U.S.C. § 271(a).

22       27.     Intel also infringes the '588 Patent under 35 U.S.C. § 271(b), (c), (f)(1), (f)(2), and  
23 (g).

24       28.     Intel has been aware of the '588 Patent and that it infringes the '588 Patent since at  
25 least May 30, 2014. On May 30, 2014, VLSI's predecessor-in-interest to the '588 Patent,  
26 Freescale Semiconductor, Inc., provided Intel with a detailed claim chart demonstrating  
27 infringement by Intel.

1           29. Intel intended to induce patent infringement by third-party original equipment  
2 manufacturers (OEMs), original design manufacturers (ODMs), customers, and users of the '588  
3 Accused Products and had knowledge that the inducing acts would cause infringement or were  
4 willfully blind to the possibility that their inducing acts would cause infringement. Intel has sold  
5 and continues to sell the Accused Products to OEMs making OEM products (e.g., computers,  
6 servers, laptops, tablets, etc.), for example, Dell, HP, Acer, Lenovo, and others, knowing and with  
7 the specific intent that the Accused Products will be included in the OEM products and sold to  
8 customers in the United States in violation of U.S. patent law, and/or to original design  
9 manufacturers (ODMs), knowing and with the specific intent that the Accused Products will  
10 ultimately be included in OEM products and sold to customers in the United States. Indeed,  
11 Intel's "Intel Inside" campaign has informed customers through advertising and stickers on the  
12 OEM products themselves that the products contain Accused Products. Intel also knows that  
13 many such OEM products that contain the Accused Products are made outside the United States  
14 and are imported into the United States in violation of U.S. patent law. Intel also knows that U.S.  
15 customers of the OEMs use the OEM products containing the Accused Products in the United  
16 States in violation of U.S. patent law.

17           30. Intel performed acts that constitute inducement of infringement, and would cause  
18 actual infringement, with the knowledge of the '588 Patent. For example, Intel has provided and  
19 continues to provide the '588 Accused Products to OEMs (and/or to ODMs) which incorporate the  
20 '588 Accused Products into products which infringe the '588 Patent and are made, used, sold,  
21 offers to sell, and/or imported in the United States of America. Intel also provides OEMs (and/or  
22 ODMs) with documentation regarding the Accused Products, including data sheets, which provide  
23 information on installing, using, and configuring the Accused Products in the OEM products.  
24 Intel sells the Accused Products to OEMs (or to ODMs who make products for OEMs) and  
25 provides such documentation with the knowledge that the OEMs (or ODMs) will install and  
26 configure the Accused Products as described and that end customers of the OEMs will use the  
27 Accused Products in the manner expected by Intel and as set out in the documentation, and Intel

1 knows that using the Accused Products in this way will constitute infringement of the '588 Patent.  
2 Intel further advertises the '588 Accused Products directly to the end-users of the infringing  
3 products made by the OEMs, further inducing the end-users to infringe the '588 Patent by buying  
4 and using infringing products containing the '588 Accused Products. Accordingly, Intel has  
5 induced and continues to induce end users of the '588 Accused Products to use the products in  
6 their ordinary and customary way to infringe the '588 Patent, knowing that such use constitutes  
7 infringement of the '588 Patent.

8 31. Intel contributes to the infringement of the '588 Patent in violation of 35 U.S.C.  
9 § 271(c). As stated above, Intel was aware of the '588 Patent at least as of May 30, 2014, when  
10 Intel was provided with a claim chart demonstrating infringement. Intel thus offers to sell and  
11 sells within the United States the '588 Accused Products knowing that those products constitute a  
12 material part of the claimed invention because Intel incorporates the infringing level shifter circuit  
13 described above into the Accused Products. Intel knows that the Accused Products are especially  
14 made or especially adapted for use in infringing the '588 Patent because the Accused Products all  
15 contain the infringing level shifter circuit. Furthermore, because the '588 Accused Products  
16 contain the infringing level shifter circuits, the Accused Products are not a staple article or  
17 commodity of commerce suitable for substantial non-infringing use. In addition, Intel offers to  
18 sell and sells the '588 Accused Products to OEMs or ODMs who then incorporate the '588  
19 Accused Products into infringing products which are used, sold, offered for sale, and/or imported  
20 in the United States in an infringing manner. Accordingly, Intel is liable as a contributory  
21 infringer.

22 32. To the extent Intel does not meet all of the limitations of the '588 Patent by making  
23 the '588 Accused Products in the United States, Intel infringes under 35 U.S.C. § 271(f)(1) and  
24 (f)(2) by supplying from the United States a substantial portion of the components of the '588  
25 Accused Products (for example, structures or components contained in semiconductor wafers or  
26 dice or the like), and actively induces the combination of components outside the United States in  
27 a manner that would infringe the '588 Patent (for example, by packaging or assembly, or by

1 incorporation into desk-top computers, laptops, servers, tablets, or the like by ODMs or  
2 OEMs). Intel further supplies from the United States components which are especially made and  
3 especially adapted for use in practicing the '588 Patent, and not staple articles or a commodity of  
4 commerce suitable for substantial non-infringing use (for example, structures or components  
5 contained in semiconductor wafers or dice or the like). Intel knows the components are especially  
6 made and especially adapted to be combined outside of the United States in a manner that would  
7 infringe the '588 Patent (for example, by packaging or assembly, or by incorporation into desk-top  
8 computers, laptops, servers, tablets, or the like by ODMs or OEMs). Based on these facts and the  
9 facts set forth in the paragraphs above, Intel infringes the '588 Patent under 35 U.S.C. § 271(f)(1)  
10 and (f)(2).

11 33. Intel infringes under 35 U.S.C. § 271(g) by importing into the United States and  
12 selling and offering for sale within the United States Accused Products made outside the United  
13 States by a process covered by one or more claims of the '588 Patent. Moreover, Intel knowingly  
14 encourages and intends to induce infringement of the '588 Patent by selling the '588 Accused  
15 Products made outside the United States by a process covered by the '588 Patent to ODMs and/or  
16 OEMs with knowledge and the specific intention that ODMs and/or OEMs will incorporate the  
17 '588 Accused Products into OEM products that the OEMs will import, offer for sale, sell, and/or  
18 test in the United States in violation of 35 U.S.C. § 271(g). Intel is aware that ODMs and/or  
19 OEMs routinely assemble OEM products (e.g., computers, servers, laptops, tablets, mobile  
20 phones, etc.) containing the '588 Accused Products outside the United States with the specific  
21 intention of importing, offering for sale, selling, and/or testing these OEM products in the United  
22 States. Intel enables and specifically encourages ODMs and/or OEMs to manufacture OEM  
23 products that contain the '588 Accused Products with knowledge that the OEM products will be  
24 imported, offered for sale, sold, and/or tested in the United States.

25 34. As a result of Intel's infringement of the '588 Patent, VLSI has suffered monetary  
26 damages, and seeks recovery in an amount adequate to compensate for Intel's infringement, but in  
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1 no event less than a reasonable royalty for the use made of the invention by Intel together with  
2 interest and costs as fixed by the Court.

3 **SECOND COUNT**

4 **(Infringement of U.S. Patent No. 7,675,806)**

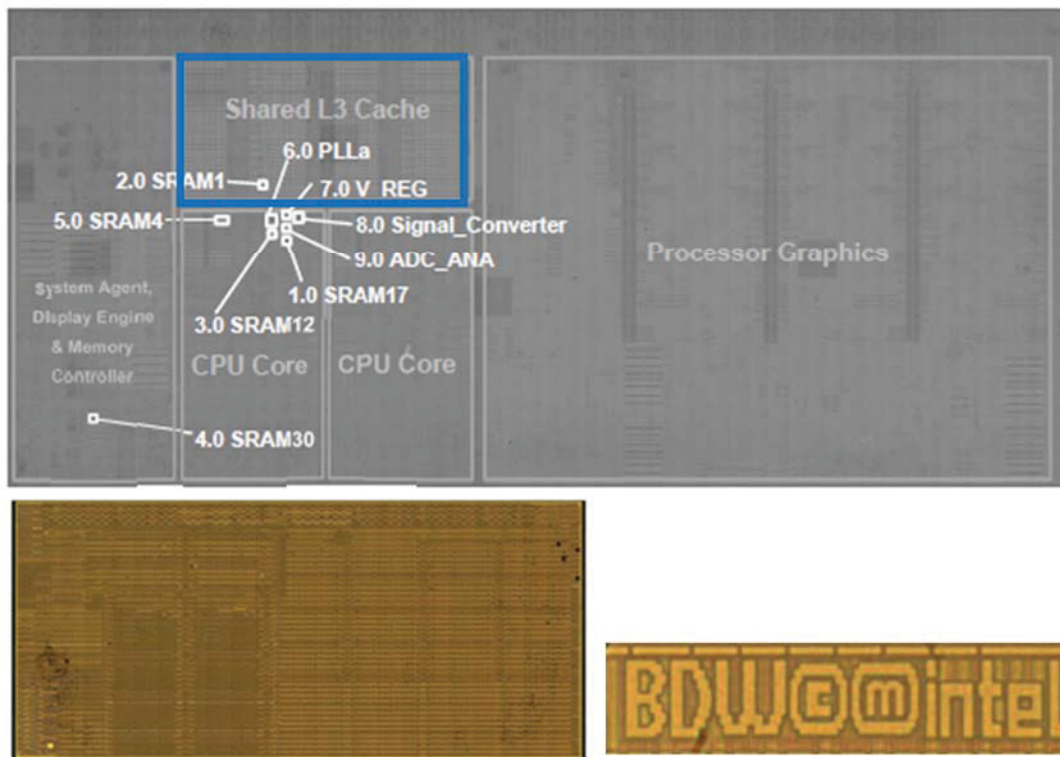
5 35. U.S. Patent No. 7,675,806, entitled “Low voltage memory device and method  
6 thereof,” was filed on May 17, 2006. The inventors of the ’806 Patent are Bradford Hunter, David  
7 Burnett, Troy Cooper, Prashant Kenkare, Ravindra Rajamaraju, Andrew Russell, Shayan Zhang,  
8 and Michael Snyder. A true and correct copy of the ’806 Patent is attached hereto as Exhibit 2.  
9 The ’806 Patent is directed to a novel technique of reducing power consumption when operating  
10 two different memories with different topologies and different minimum operating voltages.

11 36. Intel makes, uses, sells, offers to sell, and/or imports Intel Core i3, i5, and i7  
12 microprocessors; Xeon E3, E5, and E7 microprocessors; Atom microprocessors; and other Intel  
13 microprocessors that incorporate the infringing features described below (collectively, “the ’806  
14 Accused Products”), including but not limited to the Intel i3-5010 Core Processors. The ’806  
15 Accused Products infringe one or more claims of the ’806 Patent, including but not limited to  
16 claim 11 of the ’806 Patent.

17 37. To the extent the preamble of claim 11 of the ’806 Patent is limiting, the ’806  
18 Accused Products are devices.

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38. The '806 Accused Products contain a first memory having a first memory cell topology with a first minimum operating voltage and a first arrangement of transistors. For example, the Intel i3-5010 Processors include the cache memory shown below (pictured below in blue in an excerpt from a reverse engineering report). Each of the '806 Accused Products include a first memory implemented in the same or similar infringing manner as the Intel i3-5010 Core Processors as described below. The memory cells in the first memory are six-transistor SRAM memory cells.

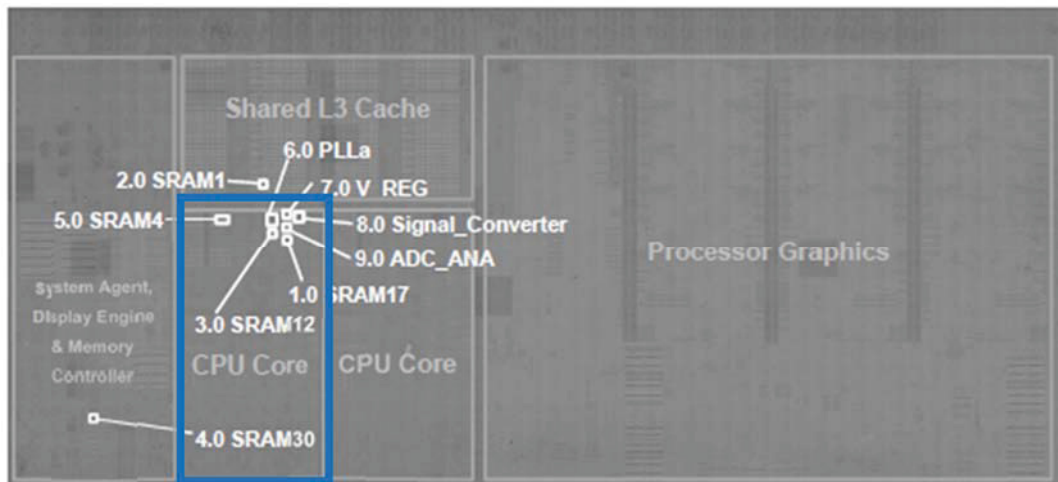


39. The '806 Accused Products contain a second memory having a second memory cell topology with a second minimum operating voltage and a second arrangement of transistors different from the first arrangement of transistors. For example, the Intel i3-5010 Processors include the cache memory shown below in red (in an excerpt from a reverse engineering report). Each of the '806 Accused Products include a second memory implemented in the same or similar infringing manner as the Intel i3-5010 Core Processors. The memory cells in the second memory are eight-transistor SRAM memory cells. This arrangement of eight-transistor memory cells is different from the six-transistor cells of the first memory.



40. The second memory in the '806 Accused Products is configured to store status information indicative of the status of data stored in the first memory. For example, the Intel i3-5010 Core Processors implement a cache control protocol which includes storing status information in the second memory regarding the status of data stored in the first memory. *See, e.g., "Intel 64 and IA-32 Architectures Software Developer's Manual,"* Volume 3A, page 11-9.

41. The '806 Accused Products comprise a processing core located at the integrated circuit. For example, the Intel i3-5010 Core Processors includes at least one processing core (blue). Each of the '806 Accused Products include a processing core located at the integrated circuit implemented in the same or similar infringing manner as the Intel i3-5010 Core Processors as described below.



42. The processing core in the '806 Accused Products is operable to access the first memory and the second memory in a first mode of operation, and to access the second memory but not the first memory when in a second mode of operation. For example, the Intel i3-5010 Core Processors have a performance mode of operation when the processing core is operable to access both the first and second memories, and a reduced power mode of operation when the processing core is operable to only access the second memory. *See, e.g., "Intel 64 and IA-32 Architectures Software Developer's Manual,"* Volume 3A, page 11-5, 11-7; "6th Generation Intel Processor Families for S-Platforms Datasheet, Volume 1 of 2," page 84.

1           43.     The processing core in the '806 Accused Products is operable to access the status  
2 information in the second mode of operation. For example, the Intel i3-5010 Core Processors  
3 access the cache control protocol status information in the second mode of operation. One  
4 example of an access to the status information in the second mode of operation is during a write-  
5 back operation.

6           44.     The processing core in the '806 Accused Products is operable to enter the first  
7 mode of operation in response to the status information indicating data corresponding to the data  
8 stored at the first memory has changed. For example, the Intel i3-5010 Core Processors may enter  
9 the first mode of operation to write data to the first memory in response to status information  
10 indicating that that the data corresponding to the data in the first memory has changed. One  
11 example of entering the first mode of operation in response to the status information is during a  
12 write-back operation to update the first memory.

13           45.     By making, using, testing, offering for sale, selling, and/or importing integrated  
14 circuits, including but not limited to the '806 Accused Products, Intel has injured VLSI and is  
15 liable to VLSI for directly infringing one or more claims of the '806 Patent, including but not  
16 limited to claim 11 pursuant to 35 U.S.C. § 271(a).

17           46.     Intel also infringes the '806 Patent under 35 U.S.C. § 271(b), (c), (f)(1), and (f)(2).

18           47.     Intel had had knowledge of the '806 Patent and of its infringement of the '806  
19 Patent since at least the date of service of this Complaint or shortly thereafter.

20           48.     Intel has intended to induce patent infringement by third-party original equipment  
21 manufacturers (OEMs), customers and users of the '806 Accused Products and had knowledge  
22 that the inducing acts would cause infringement or were willfully blind to the possibility that their  
23 inducing acts would cause infringement. Intel has sold and continues to sell the Accused Products  
24 to OEMs making OEM products (e.g., computers, servers, laptops, tablets, etc.), for example,  
25 Dell, HP, Acer, Lenovo, and others, knowing that the Accused Products will be included in the  
26 OEM products and sold to customers in the United States in violation of U.S. patent law, and/or to  
27 original design manufacturers (ODMs), knowing that the Accused Products will ultimately be



1 included in OEM products and sold to customers in the United States. Indeed, Intel's "Intel  
2 Inside" campaign has informed customers through advertising and stickers on the OEM products  
3 themselves that the products contain Accused Products. Intel also knows that many such OEM  
4 products that contain the Accused Products are made outside the United States and are imported  
5 into the United States in violation of U.S. patent law. Intel also knows that U.S. customers of the  
6 OEMs use the OEM products containing the Accused Products in the United States in violation of  
7 U.S. patent law.

8         49. Intel contributes to the infringement of the '806 Patent in violation of 35 U.S.C.  
9 § 271(c). As stated above, Intel was aware of the '806 Patent at least as of the time of service of  
10 this complaint. Intel thus offers to sell and sells within the United States the '806 Accused  
11 Products knowing that those products constitute a material part of the claimed invention because  
12 Intel incorporates the infringing memory circuits described above into the Accused Products. Intel  
13 knows that the Accused Products are especially made or especially adapted for use in infringing  
14 the '806 Patent because the Accused Products all contain the infringing memory circuits.  
15 Furthermore, because the '806 Accused Products contain the infringing memory circuits, the  
16 Accused Products are not a staple article or commodity of commerce suitable for substantial non-  
17 infringing use. In addition, Intel offers to sell and sells the '806 Accused Products to computer  
18 OEMs or ODMs who then incorporate the '806 Accused Products into infringing products which  
19 are used, sold, offered for sale, and/or imported in the United States in an infringing manner.  
20 Accordingly, Intel is liable as a contributory infringer.

21         50. To the extent Intel does not meet all of the limitations of the '806 Patent by making  
22 the '806 Accused Products in the United States, Intel supplies from the United States a substantial  
23 portion of the components of the '806 Accused Products (for example, structures or components  
24 contained in semiconductor wafers or dice or the like), and actively induces the combination of  
25 components outside the United States in a manner that would infringe the '806 Patent (for  
26 example, by packaging or assembly, or by incorporation into desk-top computers, laptops, servers,  
27 tablets, or the like by ODMs or OEMs). Intel further supplies from the United States components

1 which are especially made and especially adapted for use in practicing the '806 Patent, and not  
 2 staple articles or a commodity of commerce suitable for substantial non-infringing use (for  
 3 example, structures or components contained in semiconductor wafers or dice or the like). Intel  
 4 knows the components are especially made and especially adapted to be combined outside of the  
 5 United States in a manner that would infringe the '806 Patent (for example, by packaging or  
 6 assembly, or by incorporation into desk-top computers, laptops, servers, tablets, or the like by  
 7 ODMs or OEMs). Based on these facts and the facts set forth in the paragraphs above, Intel  
 8 infringes the '806 Patent under 35 U.S.C. § 271(f)(1) and (f)(2).

9 51. As a result of Intel's infringement of the '806 Patent, VLSI has suffered monetary  
 10 damages, and seeks recovery in an amount adequate to compensate for Intel's infringement, but in  
 11 no event less than a reasonable royalty for the use made of the invention by Intel together with  
 12 interest and costs as fixed by the Court.

### 13 **THIRD COUNT**

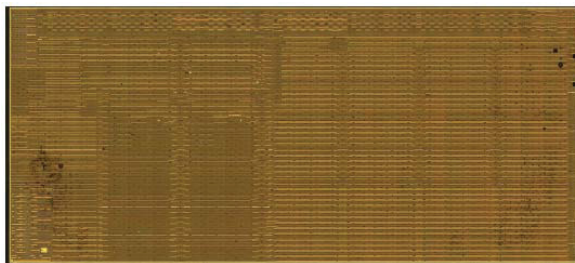
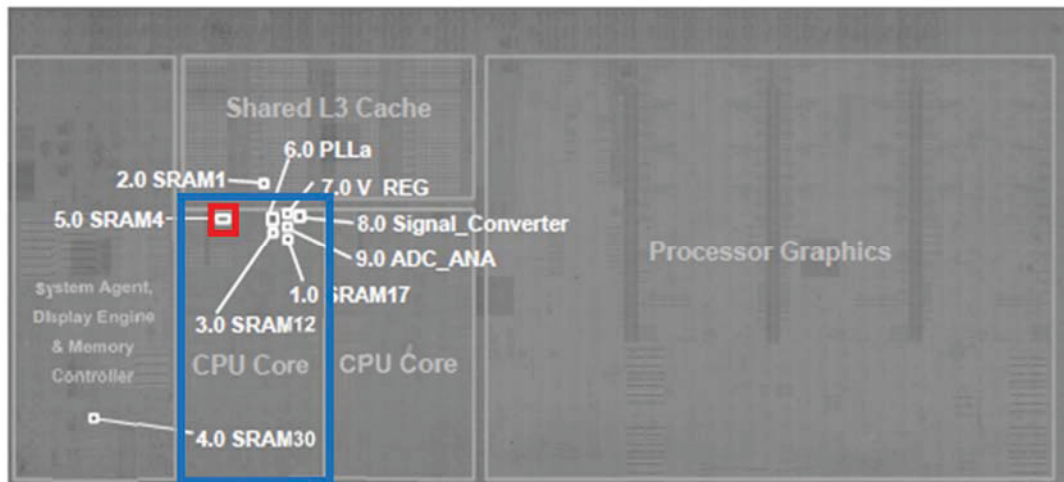
#### 14 **(Infringement of U.S. Patent No. 7,706,207)**

15 52. U.S. Patent No. 7,706,207, entitled "Memory with Level Shifting Word Line  
 16 Driver and Method Thereof," was filed on September 12, 2008. The inventors of the '207 Patent  
 17 are Thomas W. Liston, Shahnaz P. Chowdhury-Nagle, and Perry H. Pelley, III. A true and correct  
 18 copy of the '207 Patent is attached hereto as Exhibit 3. The '207 Patent is directed to a novel  
 19 arrangement of voltage level shifters to implement different voltage domains in a memory that  
 20 decreases substrate area required, increases the speed of the circuitry, and does not impede the  
 21 performance of memory accesses.

22 53. Intel makes, uses, sells, offers to sell, and/or imports Intel Core i3, i5, and i7  
 23 microprocessors; Xeon E3, E5, and E7 microprocessors; Atom microprocessors; and other Intel  
 24 microprocessors that incorporate the infringing features described below (collectively, "the '207  
 25 Accused Products"), including but not limited to the Intel i3-5010 Core Processors. The '207  
 26 Accused Products infringe one or more claims of the '207 Patent, including but not limited to  
 27 claim 9 of the '207 Patent.

54. To the extent the preamble of claim 9 of the '207 Patent is limiting, the '207 Accused Products comprise a memory. For example, the '207 Accused Products contain multiple arrays of cache memory, including at least the cache memory (red) located in a processor core (blue) of the Intel i3-5010 Core Processors (pictured below in an excerpt from a reverse engineering report). On information and belief this memory is part of the cache memory for the Intel i3-5010 Processors. Each of the '207 Accused Products include cache memory implemented in the same or similar infringing manner as the Intel i3-5010 Core Processors as described below (collectively "Accused Cache Memory").

55. The '207 Accused Products comprise a plurality of global word lines, the global word line driver circuitry having a plurality of outputs, each output coupled to a corresponding global word line of the plurality of global word lines. For example, the Accused Cache Memory found in the core of the Intel i3-5010 Core Processors includes a series of copper conductors which constitute global word lines. Each global word line is connected to multiple blocks of a group of interconnected transistors which constitutes local word line driver circuitry. Each global



1 word line is also connected to a group of interconnected transistors which constitutes global word  
2 line driver circuitry.

3 56. The '207 Accused Products comprise address decode circuitry having an output to  
4 provide a predecode value. For example, the Accused Cache Memory of the Intel i3-5010 Core  
5 Processors includes a set of inverter circuits and NAND gate circuits which constitute address  
6 decode circuitry. The address decode circuitry provides a predecode value to multiple blocks of  
7 word line driver circuitry.

8 57. The '207 Accused Products comprise a local bit cell array comprising a plurality of  
9 local word lines. For example, the Accused Cache Memory of the Intel i3-5010 Core includes a  
10 bit cell array connected to the plurality of local word lines. Each block of word line driver  
11 circuitry is connected to at least one separate local bit cell array.

12 58. The '207 Accused Products comprise local word line driver circuitry having an  
13 input coupled to the output of the address decode circuitry, and an input coupled to a  
14 corresponding global word line of the plurality of global word lines. For example, Accused Cache  
15 Memory of the Intel i3-5010 Core Processors have multiple blocks of word line driver circuitry.  
16 Each of these blocks of word line driver circuitry has an input receiving the address predecode  
17 value. Each of these blocks of word line driver circuitry also has an input to receive the global  
18 word lines.

19 59. The '207 Accused Products comprise a plurality of outputs, each output coupled to  
20 a corresponding local word line of the plurality of local word lines, wherein the local word line  
21 driver circuitry comprises a plurality of voltage level shifters, each voltage level shifter associated  
22 with a corresponding local word line of local bit cell array. For example, the Accused Cache  
23 Memory of the Intel i3-5010 Core Processors include multiple blocks of word line driver circuitry  
24 with outputs coupled to the local word lines and each local word line driver includes a set of  
25 transistors which constitute a voltage level shifter, each voltage level shifter associated with a  
26 local word line in the bit cell array. The voltage level shifters operate to shift the voltage of the  
27 global word line signal to a different voltage to operate the local bit cell array.

1           60.     The global word line driver circuitry and address decode circuitry in the '207  
2 Accused Products are operable in a first voltage domain. For example, the global word line driver  
3 circuitry and address decode circuitry in the Accused Cache Memory of the Intel i3-5010 Core  
4 Processors operate at a particular voltage supplied by the same voltage supply.

5           61.     The local bit cell array and local word line driver circuitry in the '207 Accused  
6 Products are operable in a second voltage domain different than the first voltage domain. For  
7 example, the Accused Cache Memory of the Intel i3-5010 Core Processors operate the local bit  
8 cell array and local word line driver circuitry at a different voltage from the global word line driver  
9 circuitry and address decode circuitry, with a different voltage supply than the global word line  
10 driver circuitry and address decode circuitry.

11          62.     By making, using, testing, offering for sale, selling, and/or importing integrated  
12 circuits, including but not limited to the '207 Accused Products, Intel has injured VLSI and is  
13 liable to VLSI for directly infringing one or more claims of the '207 Patent, including at least  
14 claim 9, pursuant to 35 U.S.C. § 271(a).

15          63.     Intel also indirectly infringes the '207 Patent by actively inducing and contributing  
16 to infringement under 35 U.S.C. § 271(b), (c), (f)(1) and (f)(2)).

17          64.     Intel had had knowledge of the '207 Patent and of its infringement of the '207  
18 Patent since at least the date of service of this Complaint or shortly thereafter.

19          65.     Intel intended to induce patent infringement by third-party original equipment  
20 manufacturers (OEMs), customers, and users of the '207 Accused Products and had knowledge  
21 that the inducing acts would cause infringement or were willfully blind to the possibility that their  
22 inducing acts would cause infringement. Intel has sold and continues to sell the Accused Products  
23 to OEMs making OEM products (e.g., computers, servers, laptops, tablets, etc.), for example,  
24 Dell, HP, Acer, Lenovo, and others, knowing that the Accused Products will be included in the  
25 OEM products and sold to customers in the United States in violation of U.S. patent law, and/or to  
26 original design manufacturers (ODMs), knowing that the Accused Products will ultimately be  
27 included in OEM products and sold to customers in the United States. Indeed, Intel's "Intel

1 Inside” campaign has informed customers through advertising and stickers on the OEM products  
2 themselves that the products contain Accused Products. Intel also knows that many such OEM  
3 products that contain the Accused Products are made outside the United States and are imported  
4 into the United States in violation of U.S. patent law. Intel also knows that U.S. customers of the  
5 OEMs use the OEM products containing the Accused Products in the United States in violation of  
6 U.S. patent law.

7 66. Intel contributes to the infringement of the ’207 Patent in violation of 35 U.S.C.  
8 § 271(c). As stated above, Intel was aware of the ’207 Patent at least as of the time of service of  
9 this Complaint. Intel thus offers to sell and sells within the United States the ’207 Accused  
10 Products knowing that those products constitute a material part of the claimed invention because  
11 Intel incorporates the infringing Accused Cache Memory into the Accused Products. Intel knows  
12 that the Accused Products are especially made or especially adapted for use in infringing the ’207  
13 Patent because the Accused Products all contain the infringing Accused Cache Memory.  
14 Furthermore, because the ’207 Accused Products contain the infringing Accused Cache Memory,  
15 the Accused Products are not a staple article or commodity of commerce suitable for substantial  
16 non-infringing use. In addition, Intel offers to sell and sells the ’207 Accused Products to OEMs  
17 or ODMs who then incorporate the ’207 Accused Products into infringing products which are  
18 used, sold, offered for sale, and/or imported in the United States in an infringing manner.  
19 Accordingly, Intel is liable as a contributory infringer.

20 67. To the extent Intel does not meet all of the limitations of the ’207 Patent by making  
21 the ’207 Accused Products in the United States, Intel infringes under 35 U.S.C. § 271(f)(1) and  
22 (f)(2) by supplying from the United States a substantial portion of the components of the ’207  
23 Accused Products (for example, structures or components contained in semiconductor wafers or  
24 dice or the like), and actively induces the combination of components outside the United States in  
25 a manner that would infringe the ’207 Patent (for example, by packaging or assembly, or by  
26 incorporation into desk-top computers, laptops, servers, tablets, or the like by ODMs or  
27 OEMs). Intel further supplies from the United States components which are especially made and



1 especially adapted for use in practicing the '207 Patent, and not staple articles or a commodity of  
 2 commerce suitable for substantial non-infringing use (for example, structures or components  
 3 contained in semiconductor wafers or dice or the like). Intel knows the components are especially  
 4 made and especially adapted to be combined outside of the United States in a manner that would  
 5 infringe the '207 Patent (for example, by packaging or assembly, or by incorporation into desk-top  
 6 computers, laptops, servers, tablets, or the like by ODMs or OEMs). Based on these facts and the  
 7 facts set forth in the paragraphs above, Intel infringes the '207 Patent under 35 U.S.C. § 271(f)(1)  
 8 and (f)(2).

9 68. As a result of Intel's infringement of the '207 Patent, VLSI has suffered monetary  
 10 damages, and seeks recovery in an amount adequate to compensate for Intel's infringement, but in  
 11 no event less than a reasonable royalty for the use made of the invention by Intel together with  
 12 interest and costs as fixed by the Court.

#### 13 **FOURTH COUNT**

##### 14 **(Infringement of the U.S. Patent No. 7,709,303)**

15 69. U.S. Patent No. 7,709,303, entitled "Process for Forming an Electronic Device  
 16 Including a Fin-Type Structure," was filed on January 10, 2006. The inventors of the '303 Patent  
 17 are James D. Burnett, Leo Matthew, and Byoung W. Min. A true and correct copy of the '303  
 18 Patent is attached hereto as Exhibit 4. The '303 Patent involves methods to form and alter the  
 19 height of a semiconductor fin structure to vary the characteristics of fin-type semiconductor  
 20 transistors.

21 70. Intel makes, uses, sells, offers to sell, and/or imports Intel Core i3, i5, and i7  
 22 microprocessors; Xeon E3, E5, and E7 microprocessors; Atom processors; and other Intel  
 23 microprocessors that are manufactured using the infringing process described below (collectively,  
 24 "the '303 Accused Products"), including but not limited to the Intel Xeon E3-1230 and Intel Core  
 25 i7-6700 Processors. The '303 Accused Products infringe one or more claims of the '303 Patent,  
 26 including but not limited to claim 1 of the '303 Patent.

1           71. To the extent the preamble of claim 1 of the '303 Patent is limiting, the '303  
2 Accused Products are manufactured using a process for forming an electronic device. For  
3 example, the Intel Core i7-6700 Processor is an electronic device manufactured through a series of  
4 steps.

5           72. The '303 Accused Products are manufactured using a process that includes a step  
6 to form a first semiconductor fin having a first height for a first fin-type transistor structure over a  
7 support layer of a substrate. For example, the Intel Core i7-6700 Processor includes a plurality of  
8 NMOS and PMOS fin-type transistors. The PMOS fin-type transistors have a semiconductor fin  
9 structure that is formed over a support layer of substrate during manufacture. After the formation  
10 step, the fin structure of the PMOS fin-type transistor has a first height.

11           73. The '303 Accused Products are manufactured using a process that removes a  
12 portion of the first semiconductor fin to provide the first semiconductor fin with a second height,  
13 smaller than the first height. For example, the Intel Core i7-6700 Processor a portion of a  
14 semiconductor fin structure of a PMOS fin-type transistor is removed during manufacture. After  
15 the portion of the fin structure is removed, it has a second height smaller than the first height. For  
16 example, a portion of the semiconductor fin structure for a PMOS fin-type transistor is removed to  
17 reduce the height of the semiconductor fin structure prior to the formation of a cap on the  
18 semiconductor fin structure.

19           74. By manufacturing the '303 Accused Products in the United States Intel has injured  
20 VLSI and is liable to VLSI for directly infringing one or more claims of the '303 Patent, including  
21 but not limited to claim 1, pursuant to 35 U.S.C. § 271(a).

22           75. By manufacturing the '303 Accused Products outside the United States and  
23 importing, offering for sale, selling, and/or testing the '303 Accused Products in the United States,  
24 Intel has injured VLSI and is liable to VLSI for infringing one or more claims of the '303 Patent,  
25 including at least claim 1 in violation of 35 U.S.C. § 271(g).

26           76. Intel also induces infringement of the '303 Patent contrary to 35 U.S.C. § 271(b).  
27 For example, Intel induces infringement of the '303 Patent by selling '303 Accused Products



1 manufactured outside the United States to third-party original equipment manufacturers (OEMs)  
2 (e.g., Dell, HP, Acer, Lenovo, etc.) and/or original design manufacturers (ODMs) that  
3 manufacture products for OEMs outside the United States. ODMs and/or OEMs incorporate the  
4 '303 Accused Products into OEM products (e.g., computers, servers, laptops, tablets, etc.) that  
5 OEMs import, offer for sale, sell, and/or test in the United States in violation of 35 U.S.C. §  
6 271(g).

7 77. Intel has been aware of the '303 Patent and that it infringes the '303 Patent since at  
8 least May 30, 2014. On May 30, 2014, VLSI's predecessor-in-interest to the '303 Patent,  
9 Freescale Semiconductor, Inc., provided Intel with a detailed claim chart notifying Intel of the  
10 '303 Patent and documenting infringement of the '303 Patent by the Intel Xeon E3-1230V2  
11 microprocessor.

12 78. Intel knowingly encourages and intends to induce infringement of the '303 Patent  
13 by selling the '303 Accused Products to ODMs and/or OEMs with knowledge and the specific  
14 intention that ODMs and/or OEMs will incorporate the '303 Accused Products into OEM products  
15 that the OEMs will import, offer for sale, sell, and/or test in the United States in violation of 35  
16 U.S.C. § 271(g). Intel is aware that ODMs and/or OEMs routinely assemble OEM products (e.g.,  
17 computers, servers, laptops, tablets, etc.) containing the '303 Accused Products outside the United  
18 States with the specific intention of importing, offering for sale, selling, and/or testing these OEM  
19 products in the United States. Intel enables and specifically intends for ODMs and/or OEMs to  
20 manufacture OEM products that contain the '303 Accused Products with knowledge that the OEM  
21 products will be imported, offered for sale, sold, and/or tested in the United States, and will be  
22 used by customers of the OEMs.

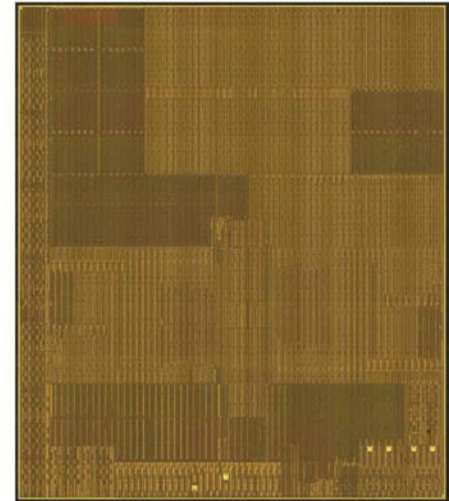
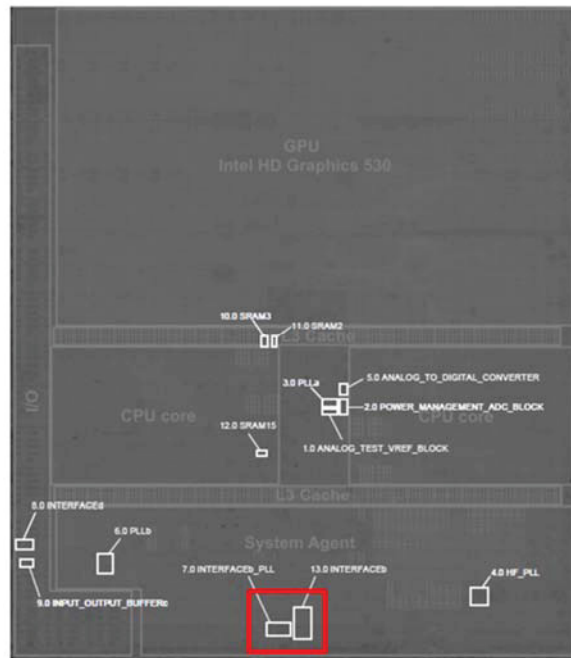
23 79. As a result of Intel's infringement of the '303 Patent, VLSI has suffered monetary  
24 damages, and seeks recovery in an amount adequate to compensate for Intel's infringement, but in  
25 no event less than a reasonable royalty for the use made of the invention by Intel together with  
26 interest and costs as fixed by the Court.

**FIFTH COUNT****(Infringement of the U.S. Patent No. 8,004,922)**

80. U.S. Patent No. 8,004,922 (“the ’922 Patent”), entitled “Power Island with Independent Power Characteristics for Memory and Logic,” was filed on June 5, 2009. The inventors of the ’922 Patent are David R. Evoy, Peter Kapporth, and Pineda De Gyvez. A true and correct copy of the ’922 Patent is attached hereto as Exhibit 5. The ’922 Patent involves altering the power characteristics supplied to a hardware component (for example, memory) and scalable logic portions of a hardware device to optimize the performance of the memory and scalable logic components.

81. Intel makes, uses, sells, offers to sell, and/or imports Intel Core i3, i5, and i7 microprocessors; Xeon E3, E5, and E7 microprocessors; Atom microprocessors; and other Intel microprocessors that incorporate the infringing features described below (collectively, “the ’922 Accused Products”), including but not limited to the Intel i3-6300 Core Processors. The ’922 Accused Products infringe one or more claims of the ’922 Patent, including but not limited to claim 1 of the ’922 Patent.

82. To the extent the preamble of claim 1 of the ’922 Patent is limiting, the ’922 Accused Products contain a power island for a system-on-a-chip (SoC). For example, Intel Core i3-6300 Processors are a system-on-a-chip that includes a power island comprising circuits labeled Interface and Interface PLL segments (red) (pictured below in an excerpt from a reverse engineering report).



83. The '922 Accused Products include a first segment comprising a hardware device, the first segment to operate the hardware device at first power characteristics indicative of at least a first voltage. For example, the Interface PLL segment of the Intel Core i3-6300 Processor includes a hardware device (e.g., at least one memory element, such as a flip flop) that operates using a power supply (which we will call the first power supply) having a set of power characteristics (e.g., voltage).

84. The '922 Accused Products include a second segment comprising scalable logic, the second segment to operate the scalable logic at second power characteristics indicative of at least a second voltage, wherein the second power characteristics of the scalable logic are different from the first power characteristics of the hardware device. For example, the Interface segment of the Intel Core i3-6300 Processor includes scalable logic (e.g., control logic). The Interface segment supplies the scalable logic (e.g., control logic) with a second power supply that has different power characteristics (e.g., a different voltage) from the first power supply provided to the hardware device.

1           85.     The '922 Accused Products include a supply line to receive an external supply  
2 signal (VDD) and to direct the external supply signal to both the first segment and the second  
3 segment, wherein the second segment is configured to change at least one power characteristic of  
4 the external supply signal to operate the scalable logic according to the second power  
5 characteristics. For example, the Interface and Interface PLL segments of the Intel Core i3-6300  
6 Processor receive the first power supply from an external supply line. The first supply signal is  
7 provided to both the Interface and Interface PLL segments. The Interface segment is configured to  
8 alter the power characteristics of the first power supply and provide this altered power supply  
9 signal (e.g., the second supply) to the scalable logic.  
10

11           86.     The '922 Accused Products include a supply power converter coupled between the  
12 supply line and the scalable logic, wherein the supply power converter is configured to convert a  
13 supply voltage of the external supply signal from the first power characteristics to the second  
14 power characteristics. For example, the Interface segment of the Intel Core i3-6300 Processor  
15 includes a power switch coupled between the first power supply line and the scalable logic. The  
16 power switch converts the first power supply signal to a second power supply signal having  
17 different power characteristics (e.g., a different voltage).  
18

19           87.     The '922 Accused Products include a conversion controller coupled to the supply  
20 power converter, wherein the conversion controller is configured to control the supply power  
21 converter to change the external supply signal according to the second power characteristics of the  
22 scalable logic. For example, the Intel Core i3-6300 Processors include a conversion controller  
23 coupled to the power switch of the Interface segment (e.g., a six-bit bus). The conversion  
24 controller is operable to control the power switch by modifying a control signal supplied to the  
25 power switch. The power switch is operable to modify the power characteristics of the second  
26  
27

1 power supply signal output from the power switch based on the control signal received from the  
2 conversion controller.

3 88. By making, importing, offering to sell, selling, and/or testing the '922 Accused  
4 Products in the United States Intel has injured VLSI and is liable to VLSI for directly infringing  
5 one or more claims of the '922 Patent, including at least claims 1 and 17, pursuant to 35 U.S.C. §  
6 271(a).

7 89. Intel also infringes the '922 Patent under 35 U.S.C. § 271(b), (c), (f)(1), (f)(2), and  
8 (g).  
9

10 90. By manufacturing the '922 Accused Products outside the United States and  
11 importing, offering for sale, selling, and/or testing the '922 Accused Products in the United States  
12 Intel has injured VLSI and is liable to VLSI for directly infringing one or more claims of the '922  
13 Patent pursuant to 35 U.S.C. §271(g).

14 91. Intel also induces infringement of the '922 Patent contrary to 35 U.S.C. § 271(b).  
15 For example, Intel induces infringement of the '922 Patent by selling '922 Accused Products  
16 manufactured outside the United States to third-party original equipment manufacturers (OEMs)  
17 (e.g., Dell, HP, Acer, Lenovo, etc.) and/or original design manufacturers (ODMs) that  
18 manufacture products for OEMs outside the United States. ODMs and/or OEMs incorporate the  
19 '922 Accused Products into OEM products (e.g., computers, servers, laptops, tablets, etc.) that  
20 OEMs import, offer for sale, sell, and/or test in the United States in violation of 35 U.S.C.  
21 §§ 271(a) and 271(g).  
22

23 92. Intel had had knowledge of the '922 Patent and of its infringement of the '922  
24 Patent since at least the date of service of this Complaint or shortly thereafter.  
25

26 93. Intel knowingly encourages and intends to induce infringement of the '922 Patent  
27 by selling the '922 Accused Products outside the United States to ODMs and/or OEMs with

1 knowledge and the specific intention that ODMs and/or OEMs will incorporate the '922 Accused  
2 Products into OEM products that the OEMs will import, offer for sale, sell, and/or test in the  
3 United States in violation of 35 U.S.C. §§ 271(a) and 271(g). Intel is aware that ODMs and/or  
4 OEMs routinely assemble OEM products (e.g., computers, servers, laptops, tablets, etc.)  
5 containing the '922 Accused Products outside the United States with the specific intention of  
6 importing, offering for sale, selling, and/or testing these OEM products in the United States. Intel  
7 enables and specifically encourages ODMs and/or OEMs to manufacture OEM products that  
8 contain the '922 Accused Products with knowledge that the OEM products will be imported,  
9 offered for sale, sold, and/or tested in the United States to increase sales of the '922 Accused  
10 Products that are destined for the United States market. Intel also knows and specifically intends  
11 that U.S. customers of the OEMs use the OEM computers containing the Accused Products in the  
12 United States in violation of U.S. patent law.

14           94. Intel contributes to the infringement of the '922 Patent in violation of 35 U.S.C.  
15 § 271(c). As stated above, Intel was aware of the '922 Patent and of its infringement at least as of  
16 the time of service of this Complaint. Intel offers to sell and sells within the United States the  
17 '922 Accused Products knowing that those products constitute a material part of the claimed  
18 invention because Intel incorporates the infringing power island described above into the Accused  
19 Products. Intel knows that the Accused Products are especially made or especially adapted for use  
20 in infringing the '922 Patent because the Accused Products all contain the infringing power island.  
21 Furthermore, because the '922 Accused Products contain the infringing power island, the Accused  
22 Products are not a staple article or commodity of commerce suitable for substantial non-infringing  
23 use. In addition, Intel offers to sell and sells the '922 Accused Products to OEMs or ODMs who  
24 then incorporate the '922 Accused Products into infringing products which are used, sold, offered  
25  
26  
27

1 for sale, and/or imported in the United States in an infringing manner. Accordingly, Intel is liable  
2 as a contributory infringer.

3 95. To the extent Intel does not meet all of the limitations of the '922 Patent by making  
4 the '922 Accused Products in the United States, Intel supplies from the United States a substantial  
5 portion of the components of the '922 Accused Products (for example, structures or components  
6 contained in semiconductor wafers or dice or the like), and actively induces the combination of  
7 components outside the United States in a manner that would infringe the '922 Patent (for  
8 example, by packaging or assembly, or by incorporation into desk-top computers, laptops, servers,  
9 tablets, or the like by ODMs or OEMs). Intel further supplies from the United States components  
10 which are especially made and especially adapted for use in practicing the '922 Patent, and not  
11 staple articles or a commodity of commerce suitable for substantial non-infringing use (for  
12 example, structures or components contained in semiconductor wafers or dice or the like). Intel  
13 knows the components are especially made and especially adapted to be combined outside of the  
14 United States in a manner that would infringe the '922 Patent (for example, by packaging or  
15 assembly, or by incorporation into desk-top computers, laptops, servers, tablets, or the like by  
16 ODMs or OEMs). Based on these facts and the facts set forth in the paragraphs above, Intel  
17 infringes the '922 Patent under 35 U.S.C. § 271(f)(1) and (f)(2).  
18  
19

20 96. As a result of Intel's infringement of the '922 Patent, VLSI has suffered monetary  
21 damages, and seeks recovery in an amount adequate to compensate for Intel's infringement, but in  
22 no event less than a reasonable royalty for the use made of the invention by Intel together with  
23 interest and costs as fixed by the Court.  
24

#### 25 **SIXTH COUNT**

#### 26 **(Infringement of U.S. Patent No. 8,020,014)**

27 97. U.S. Patent No. 8,020,014, entitled "Method for Power Reduction and a Device  
28 Having Power Reduction Capabilities," was filed on May 11, 2005. The inventors of the '014



1 Patent are Michael Priel, Dan Kuzmin, Anton Rozen, and Leonid Smolyanski. VLSI is the owner  
2 by assignment of the '014 Patent. A true and correct copy of the '014 Patent is attached hereto as  
3 Exhibit 6. The present invention describes a method for power management and especially for  
4 power reduction of a memory during a low power mode. This is achieved by determining whether  
5 to power down the portion of the memory in response to a relationship between an estimated  
6 power gain and an estimated power loss resulting from powering down that portion of the memory  
7 during the low power mode.

8 98. Intel makes, uses, sells, offers to sell, and/or imports processors including Intel  
9 Core i3, i5, and i7 microprocessors; Xeon E3, E5, and E7 microprocessors; Atom  
10 microprocessors; and all other Intel microprocessors that incorporate the infringing features  
11 (collectively, "the '014 Accused Products"). The '014 Accused Products infringe one or more  
12 claims of the '014 Patent, including but not limited to claim 1 of the '014 Patent.

13 99. To the extent the preamble of claim 1 is limiting, the '014 Accused Products  
14 provide power reduction.

15 100. The '014 Accused Products comprise features for selectively providing power to at  
16 least a portion of a component of an integrated circuit during a low power mode. For example, the  
17 '014 Accused Products operate in certain low power states called "package states," which  
18 selectively provide power to at least a portion of a component of an integrated circuit during a low  
19 power mode. (*See, e.g.*, 6th Generation Intel® Core™ Processor Datasheet for U/Y-Platforms,  
20 Vol. 1, May 2016).

21 101. The '014 Accused Products comprise features for determining whether to power  
22 down the at least portion of the component in response to a relationship between an estimated  
23 power gain and an estimated power loss resulting from powering down the at least portion of the  
24 component during the low power mode. For example, the '014 Accused Products have C-State  
25 Auto-Demotion and cache shrinking features which determine whether to power down at least a  
26 portion of the component based on, *inter alia*, the expected power savings of a lower power state  
27 and the expected energy costs of frequent entry/exit into a lower power state (*i.e.*, in response to a



1 relationship between an estimated power gain and an estimated power loss resulting from  
2 powering down the at least portion of the component during the low power mode).

3 102. By making, using, testing, offering for sale, selling, and/or importing integrated  
4 circuits, including but not limited to the '014 Accused Products, Intel has injured VLSI and is  
5 liable to VLSI for directly infringing one or more claims of the '014 Patent, including at least  
6 claim 1 of the '014 Patent, pursuant to 35 U.S.C. § 271(a).

7 103. Intel also infringes the '014 Patent by under 35 U.S.C. § 271(b), (c), (f)(1) and  
8 (f)(2)).

9 104. Intel has been aware of the '014 Patent and that it infringed the '014 Patent since  
10 at least May 30, 2014 when VLSI's predecessor-in-interest Freescale Semiconductor, Inc.,  
11 provided a detailed claim chart demonstrating infringement by Intel. Nevertheless, Intel has  
12 continued to sell the '014 Accused Products with knowledge that they infringe or induce or  
13 contribute to infringement of the '014 Patent.

14 105. Intel has intended to induce patent infringement by third-party original equipment  
15 manufacturers (OEMs), customers and users of the '014 Accused Products and had knowledge  
16 that the inducing acts would cause infringement or were willfully blind to the possibility that their  
17 inducing acts would cause infringement. Intel has sold and continues to sell the Accused Products  
18 to OEMs making OEM products (e.g., computers, servers, laptops, tablets, etc.), for example,  
19 Dell, HP, Acer, Lenovo, and others, knowing and specifically intending that the Accused Products  
20 will be included in the OEM products and sold to customers in the United States in violation of  
21 U.S. patent law, and/or to original design manufacturers (ODMs), knowing and specifically  
22 intending that the Accused Products will ultimately be included in OEM products and sold to  
23 customers in the United States. Indeed, Intel's "Intel Inside" campaign has informed customers  
24 through advertising and stickers on the OEM products themselves that the products contain  
25 Accused Products. Intel also knows that many such OEM products that contain the Accused  
26 Products are made outside the United States and are imported into the United States in violation of  
27

1 U.S. patent law. Intel also knows that U.S. customers of the OEMs use the OEM products  
2 containing the Accused Products in the United States in violation of U.S. patent law.

3 106. Intel performed acts that constitute inducement of infringement, and would cause  
4 actual infringement, with the knowledge of the '014 Patent. For example, Intel has provided and  
5 continues to provide the '014 Accused Products to OEMs or ODMs which incorporate the '014  
6 Accused Products into products which infringe the '014 Patent and are made, used, sold, offers to  
7 sell, and/or imported in the United States of America. Intel also provides OEMs or ODMs with  
8 documentation regarding the Accused Products, including data sheets, which provide information  
9 on installing, using, and configuring the Accused Products in the OEM computers. Intel sells the  
10 Accused Products to OEMs or ODMs and provides such documentation with the knowledge and  
11 the intent that the OEMs or ODMs will install and configure the Accused Products as described  
12 and that end customers of the OEMs will use the Accused Products in the manner expected by  
13 Intel and as set out in the documentation, and Intel knows that using the Accused Products in this  
14 way will constitute infringement of the '014 Patent. Intel further advertises the '014 Accused  
15 Products directly to the end-users of the infringing products made by the computer OEMs, further  
16 inducing the end-users to infringe the '014 Patent by buying and using infringing products  
17 containing the '014 Accused Products. Accordingly, Intel has induced and continues to induce  
18 end users of the '014 Accused Products to use the products in their ordinary and customary way to  
19 infringe the '014 Patent, knowing that such use constitutes infringement of the '014 Patent.

20 107. Intel contributes to the infringement of the '014 Patent in violation of 35 U.S.C.  
21 § 271(c). As stated above, Intel was aware of the '014 Patent and of its infringement of the '014  
22 Patent at least as of May 14, 2014. Intel offers to sell and sells within the United States the '014  
23 Accused Products knowing that those products constitute a material part of the claimed invention  
24 because the Accused Products use the infringing power reduction features described above. Intel  
25 knows that the Accused Products are especially made or especially adapted for use in infringing  
26 the '014 Patent because the Accused Products all use the infringing power reduction features.  
27 Furthermore, because the '014 Accused Products use the infringing power reduction features when

1 operated by an end-user, the Accused Products are not a staple article or commodity of commerce  
2 suitable for substantial non-infringing use. In addition, Intel offers to sell and sells the '014  
3 Accused Products to OEMs or ODMs who then incorporate the '014 Accused Products into  
4 infringing products which are used, sold, offered for sale, and/or imported in the United States in  
5 an infringing manner. Accordingly, Intel is liable as a contributory infringer.

6 108. To the extent Intel does not meet all of the limitations of the '014 Patent by making  
7 the '014 Accused Products in the United States, Intel supplies from the United States a substantial  
8 portion of the components of the '014 Accused Products (for example, structures or components  
9 contained in semiconductor wafers or dice or the like), and actively induces the combination of  
10 components outside the United States in a manner that would infringe the '014 Patent (for  
11 example, by packaging or assembly, or by incorporation into desk-top computers, laptops, servers,  
12 tablets, or the like by ODMs or OEMs). Intel further supplies from the United States components  
13 which are especially made and especially adapted for use in practicing the '014 Patent, and not  
14 staple articles or a commodity of commerce suitable for substantial non-infringing use (for  
15 example, structures or components contained in semiconductor wafers or dice or the like). Intel  
16 knows the components are especially made and especially adapted to be combined outside of the  
17 United States in a manner that would infringe the '014 Patent (for example, by packaging or  
18 assembly, or by incorporation into desk-top computers, laptops, servers, tablets, or the like by  
19 ODMs or OEMs). Based on these facts and the facts set forth in the paragraphs above, Intel  
20 infringes the '014 Patent under 35 U.S.C. § 271(f)(1) and (f)(2).

21 109. As a result of Intel's infringement of the '014 Patent, VLSI has suffered monetary  
22 damages, and seeks recovery in an amount adequate to compensate for Intel's infringement, but in  
23 no event less than a reasonable royalty for the use made of the invention by Intel together with  
24 interest and costs as fixed by the Court.

**SEVENTH COUNT****(Infringement of U.S. Patent No. 8,268,672)**

110. U.S. Patent No. 8,268,672, entitled “Method of Assembly and Assembly Thus Made” was filed on November 6, 2006. The inventors of the ’672 Patent are Nicolaas Johannes Anthonius Van Veen and Hendrik Pieter Hochstenbach. A true and correct copy of the ’672 Patent is attached hereto as Exhibit 7.

111. The ’672 Patent describes an improved method and apparatus of electrically connecting multiple semiconductor substrates together into a single packaged chip by using a thin solder layer between the underbump metallization of the chips. This way of connecting the chips has significant advantages over the prior art.

112. Intel makes, uses, sells, offers to sell, and/or imports Stratix 10 Field Programmable Gate Arrays (FPGAs), other products that incorporate Embedded Multi-die Interconnect Bridge (“EMIB”) technology, including FPGAs manufactured for third parties, and other products that incorporate the infringing features described below (collectively, “the ’672 Accused Products”). The ’672 Accused Products infringe one or more claims of the ’672 Patent, including but not limited to claim 9 of the ’672 Patent.

113. To the extent the preamble of claim 9 is limiting, the ’672 Accused Products include an assembly of a first chip and a second chip, both of which comprise a semiconductor substrate and a surface with bond pads that are exposed in apertures in a passivation layer, the surfaces facing each other. For example, the Intel Stratix 10 includes a core fabric chip and an EMIB chip. The core fabric and EMIB chips both include a semiconductor substrate with a surface that has a passivation layer and bond pads that are accessible through the passivation layer. The core fabric and EMIB chips are arranged so that the surfaces with bond pads face each other.

114. The ’672 Accused Products include a plurality of bond pads on the first chip being electrically connected to corresponding bond pads at the second chip through a solder interconnection. For example, the Intel Stratix 10 includes a core fabric chip and an EMIB chip.

1 Bond pads of the core fabric chip are electrically connected to corresponding bond pads of the  
2 EMIB chip through a solder interconnection.

3 115. The '672 Accused Products include a solder interconnection that is a layer  
4 sandwiched between a first underbump metallization and a second metallization, which layer has a  
5 thickness that is smaller than that of the metallizations, and an intermetallic compound being  
6 present at an interface of the layer and the second metallization. For example, the Intel Stratix 10  
7 includes a solder interconnection layer sandwiched between a first underbump metallization of a  
8 core fabric chip and a second metallization of an EMIB chip. The solder interconnection layer is  
9 thinner than the metallizations. An intermetallic compound (e.g., a copper/tin compound) is  
10 formed at the interface of the solder interconnection layer and the metallization of the EMIB chip.

11 116. By manufacturing, importing, offering to sell, selling, and/or testing the '672  
12 Accused Products in the United States Intel has injured VLSI and is liable to VLSI for directly  
13 infringing one or more claims of the '672 Patent, including but not limited to claim 9, pursuant to  
14 35 U.S.C. § 271(a).

15 117. Intel also infringes the '672 Patent under 35 U.S.C. § 271(b), (c), (f)(1), (f)(2), and  
16 (g).

17 118. By manufacturing the '672 Accused Products outside the United States and  
18 importing, offering for sale, selling, and/or testing the '672 Accused Products in the United States,  
19 Intel has injured VLSI and is liable to VLSI for directly infringing one or more claims of the '672  
20 Patent, including but not limited to claim 9, pursuant to 35 U.S.C. § 271(g).

21 119. Intel also induces infringement of the '672 Patent contrary to 35 U.S.C. § 271(b).  
22 For example, Intel induces infringement of the '672 Patent by selling '672 Accused Products  
23 manufactured outside the United States to customers that import, offer for sale, sell, and/or test the  
24 '672 Accused Products and/or customer products incorporating the '672 Accused Products in the  
25 United States in violation of 35 U.S.C. §§ 271(a) and 271(g).

26 120. Intel had had knowledge of the '672 Patent and of its infringement of the '672  
27 Patent since at least the date of service of this Complaint or shortly thereafter.

121. Intel knowingly encourages and intends to induce infringement of the '672 Patent by selling the '672 Accused Products outside the United States to customers with knowledge and the specific intention that customers will import, offer for sale, sell, and/or test the '672 Accused Products and/or customer products incorporating the '672 Accused Products in the United States in violation of 35 U.S.C. §§ 271(a) and 271(g). The United States is an important market for Intel, and sales of the '672 Accused Products to customers that ultimately sell the '672 Accused Products and/or customer products incorporating the '672 Accused Products in the United States are a significant market for Intel. Intel knowingly enables and specifically encourages customers to import, offer for sale, sell, and/or test the '672 Accused Products and/or customer products incorporating the '672 Accused Products in the United States to increase sales of the '672 Accused Products that are destined for the United States market.

122. Intel contributes to the infringement of the '672 Patent in violation of 35 U.S.C. § 271(c). As stated above, Intel was aware of the '672 Patent and of its infringement at least as of the time of service of this Complaint. Intel offers to sell and sells within the United States the '672 Accused Products knowing that those products constitute a material part of the claimed invention because Intel incorporates the infringing assembly of chips described above into the Accused Products. Intel knows that the Accused Products are especially made or especially adapted for use in infringing the '672 Patent because the Accused Products all contain the infringing assembly of chips. Furthermore, because the '672 Accused Products contain the infringing assembly of chips, the Accused Products are not a staple article or commodity of commerce suitable for substantial non-infringing use. In addition, Intel offers to sell and sells the '672 Accused Products to OEMs or ODMs who then incorporate the '672 Accused Products into infringing products which are used, sold, offered for sale, and/or imported in the United States in an infringing manner. Accordingly, Intel is liable as a contributory infringer.

123. Intel infringes 35 U.S.C. § 271(f)(1) and (f)(2) by supplying from the United States components which are combined outside the United States to infringe the '672 Patent (in combination with the facts set forth above). To the extent Intel does not meet all of the limitations

1 of the '672 Patent by making the '672 Accused Products in the United States, Intel supplies from  
2 the United States a substantial portion of the components of the '672 Accused Products (for  
3 example, structures or components contained in semiconductor wafers or dice or the like), and  
4 actively induces the combination of components outside the United States in a manner that would  
5 infringe the '672 Patent (for example, by packaging or assembly, or by incorporation into desk-top  
6 computers, laptops, servers, tablets, or the like by ODMs or OEMs). Intel further supplies from  
7 the United States components which are especially made and especially adapted for use in  
8 practicing the '672 Patent, and not staple articles or a commodity of commerce suitable for  
9 substantial non-infringing use (for example, structures or components contained in semiconductor  
10 wafers or dice or the like). Intel knows the components are especially made and especially  
11 adapted to be combined outside of the United States in a manner that would infringe the '672  
12 Patent (for example, by packaging or assembly, or by incorporation into desk-top computers,  
13 laptops, servers, tablets, or the like by ODMs or OEMs). Based on these facts and the facts set  
14 forth in the paragraphs above, Intel infringes the '672 Patent under 35 U.S.C. § 271(f)(1) and  
15 (f)(2).

16 124. As a result of Intel's infringement of the '672 Patent, VLSI has suffered monetary  
17 damages, and seeks recovery in an amount adequate to compensate for Intel's infringement, but in  
18 no event less than a reasonable royalty for the use made of the invention by Intel together with  
19 interest and costs as fixed by the Court.

## 20 EIGHTH COUNT

### 21 (Infringement of U.S. Patent No. 8,566,836)

22 125. U.S. Patent No. 8,566,836, entitled "Multi-Core System on Chip," was filed on  
23 November 13, 2009. The inventors of the '836 Patent are Ravindraraj Ramaraju, David R.  
24 Bearden, and William C. Moyer. A true and correct copy of the '836 Patent is attached hereto as  
25 Exhibit 8. The '836 Patent is directed to methods and systems for determining and optimizing the  
26 performance of multi-core processors, for example, measuring the speed of the cores and then  
27 selecting the fastest core for a single core task.



1           126. Intel makes, uses, sells, offers to sell, and/or imports processors that use Turbo  
2 Boost Max Technology 3.0, including but not limited to Intel's Core i7 Extreme Edition processor  
3 and Core i7-69xx/68xx processor families (collectively, "the '836 Accused Products"). The '836  
4 Accused Products infringe one or more claims of the '836 Patent, including but not limited to  
5 claim 1 of the '836 Patent.

6           127. To the extent the preamble of claim 1 is limiting, the '836 Accused Products are  
7 multi-core processing devices.

8           128. The '836 Accused Products comprise features for measuring a processing speed  
9 parameter for each of a plurality of cores. For example, the '836 Accused Products incorporating  
10 Intel's Turbo Boost Max Technology 3.0 identify the fastest core on the die to provide greater  
11 levels of performance. Indeed, Intel's Turbo Boost Max Technology 3.0 identifies the best  
12 performing core(s) on a processor.

13           129. The '836 Accused Products comprise features for storing each measured processing  
14 speed parameter for each of the plurality of cores in a storage device. For example, Intel  
15 advertises the ability of '836 Accused Products incorporating Intel's Turbo Boost Max  
16 Technology 3.0 to run targeted applications on a particular, high-performing core. (*See, e.g.,*  
17 Intel® Core™ i7 Processor Family for LGA2011-v3 Socket, Volume 1 of 2, August 2016). The  
18 '836 Accused Products achieve this feature by storing the speed parameters of the cores for future  
19 use in choosing a particular high-performing core.

20           130. The '836 Accused Products comprise features that, upon identifying a processing  
21 task that cannot be run across the plurality of cores, selecting a core from the plurality of cores  
22 having a fastest measured processing speed parameter at a given voltage to run the processing  
23 task. For example, Intel's Turbo Boost Max Technology 3.0 uses a driver coupled with  
24 information stored in the CPU to identify and direct workloads to the fastest core on the die first.

25           131. By making, using, testing, offering for sale, selling, and/or importing integrated  
26 circuits, including but not limited to the '836 Accused Products, Intel has injured VLSI and is  
27



1 liable to VLSI for directly infringing one or more claims of the '836 Patent, including but not  
2 limited to claim 1 of the '836 Patent, pursuant to 35 U.S.C. § 271(a).

3 132. Intel also infringes the '836 Patent under 35 U.S.C. § 271(b), (c), (f)(1), (f)(2), and  
4 (g).

5 133. Intel has had knowledge of the '836 Patent and of its infringement of the '836  
6 Patent since at least the date of service of this Complaint or shortly thereafter.

7 134. Intel has intended to induce patent infringement by third-party original equipment  
8 manufacturers (OEMs), customers and users of the '836 Accused Products and had knowledge  
9 that the inducing acts would cause infringement or were willfully blind to the possibility that their  
10 inducing acts would cause infringement. Intel has sold and continues to sell the '836 Accused  
11 Products to OEMs making OEM products (e.g., computers, servers, laptops, tablets, etc.), for  
12 example, Dell, HP, Acer, Lenovo, and others, knowing and specifically intending that the Accused  
13 Products will be included in the OEM products and sold to customers in the United States in  
14 violation of U.S. patent law, and/or to original design manufacturers (ODMs), knowing and  
15 specifically intending that the Accused Products will ultimately be included in OEM products and  
16 sold to customers in the United States. Indeed, Intel's promotion of its Turbo Boost Max  
17 Technology 3.0 has informed customers through advertising materials that products incorporating  
18 that feature contain '836 Accused Products. Intel also knows that many such OEM products that  
19 contain the '836 Accused Products are made outside the United States and are imported into the  
20 United States in violation of U.S. patent law. Intel also knows that U.S. customers of the OEMs  
21 use the OEM products containing the '836 Accused Products in the United States in violation of  
22 U.S. patent law.

23 135. Intel performed acts that constitute inducement of infringement, and would cause  
24 actual infringement, with the knowledge of the '836 Patent. For example, Intel has provided and  
25 continues to provide the '836 Accused Products to OEMs or ODMs which incorporate the '836  
26 Accused Products into products which infringe the '836 Patent and are made, used, sold, offers to  
27 sell, and/or imported in the United States of America. Intel also provides OEMs or ODMs with

1 documentation regarding the '836 Accused Products, including data sheets, which provide  
2 information on installing, using, and configuring the '836 Accused Products in the OEM  
3 computers. Intel sells the '836 Accused Products to OEMs or ODMs and provides such  
4 documentation with the knowledge and intent that the OEMs or ODMs will install and configure  
5 the '836 Accused Products as described and that end customers of the OEMs will use the Accused  
6 Products in the manner expected by Intel and as set out in the documentation, and Intel knows that  
7 using the '836 Accused Products in this way will constitute infringement of the '836 Patent. Intel  
8 further advertises the '836 Accused Products directly to the end-users of the infringing products  
9 made by the computer OEMs, further inducing the end-users to infringe the '836 Patent by buying  
10 and using infringing products containing the '836 Accused Products. Accordingly, Intel has  
11 induced and continues to induce end users of the '836 Accused Products to use the products in  
12 their ordinary and customary way to infringe the '836 Patent, knowing that such use constitutes  
13 infringement of the '836 Patent.

14 136. Intel contributes to the infringement of the '836 Patent in violation of 35 U.S.C.  
15 § 271(c). As stated above, Intel was aware of the '836 Patent and of its infringement at least as of  
16 the time of service of this Complaint. Intel offers to sell and sells within the United States the  
17 '836 Accused Products knowing that those products constitute a material part of the claimed  
18 invention because the Accused Products use the infringing multi-core processing features  
19 described above. Intel knows that the Accused Products are especially made or especially adapted  
20 for use in infringing the '836 Patent because the Accused Products all use the infringing multi-  
21 core processing features. Furthermore, because the '836 Accused Products use the infringing  
22 multi-core processing features when operated by an end-user, the Accused Products are not a  
23 staple article or commodity of commerce suitable for substantial non-infringing use. In addition,  
24 Intel offers to sell and sells the '836 Accused Products to OEMs or ODMs who then incorporate  
25 the '836 Accused Products into infringing products which are used, sold, offered for sale, and/or  
26 imported in the United States in an infringing manner. Accordingly, Intel is liable as a  
27 contributory infringer. Intel contributes to the infringement of the '836 Patent. Intel offers to sell

1 and sells within the United States the '836 Accused Products knowing that those products  
2 constitute a material part of the claimed invention and are especially made for use in infringement  
3 of the '836 Patent. For example, Intel offers to sell and sells the '836 Accused Products to  
4 computer OEMs or ODMs who then incorporate the '836 Accused Products into infringing  
5 products which are used, sold, offered for sale, and/or imported in the United States in an  
6 infringing manner. Furthermore, the '836 Accused Products are not a staple article or commodity  
7 of commerce suitable for substantial noninfringing use. Accordingly, Intel is liable as a  
8 contributory infringer.

9 137. To the extent Intel does not meet all of the limitations of the '836 Patent by making  
10 the '836 Accused Products in the United States, Intel supplies from the United States a substantial  
11 portion of the components of the '836 Accused Products (for example, structures or components  
12 contained in semiconductor wafers or dice or the like), and actively induces the combination of  
13 components outside the United States in a manner that would infringe the '836 Patent (for  
14 example, by packaging or assembly, or by incorporation into desk-top computers, laptops, servers,  
15 tablets, or the like by ODMs or OEMs). Intel further supplies from the United States components  
16 which are especially made and especially adapted for use in practicing the '836 Patent, and not  
17 staple articles or a commodity of commerce suitable for substantial non-infringing use (for  
18 example, structures or components contained in semiconductor wafers or dice or the like). Intel  
19 knows the components are especially made and especially adapted to be combined outside of the  
20 United States in a manner that would infringe the '836 Patent (for example, by packaging or  
21 assembly, or by incorporation into desk-top computers, laptops, servers, tablets, or the like by  
22 ODMs or OEMs). Based on these facts and the facts set forth in the paragraphs above, Intel  
23 infringes the '836 Patent under 35 U.S.C. § 271(f)(1) and (f)(2).

24 138. Intel infringes under 35 U.S.C. § 271(g) by importing into the United States and  
25 selling and offering for sale within the United States Accused Products made outside the United  
26 States by a process covered by the claims of the '836 Patent. Moreover, Intel knowingly  
27 encourages and intends to induce infringement of the '836 Patent by selling the '836 Accused

Products made outside the United States by a process covered by the '836 Patent to ODMs and/or OEMs with knowledge and the specific intention that ODMs and/or OEMs will incorporate the '836 Accused Products into OEM products that the OEMs will import, offer for sale, sell, and/or test in the United States in violation of 35 U.S.C. § 271(g). Intel is aware that ODMs and/or OEMs routinely assemble OEM products (e.g., computers, servers, laptops, tablets, etc.) containing the '836 Accused Products outside the United States with the specific intention of importing, offering for sale, selling, and/or testing these OEM products in the United States. Intel enables and specifically encourages ODMs and/or OEMs to manufacture OEM products that contain the '836 Accused Products with knowledge that the OEM products will be imported, offered for sale, sold, and/or tested in the United States.

139. As a result of Intel's infringement of the '836 Patent, VLSI has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Intel's infringement, but in no event less than a reasonable royalty for the use made of the invention by Intel together with interest and costs as fixed by the Court.

#### PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays for judgment and seeks relief against Intel as follows:

(a) For judgment that the patents-in-suit have been and/or continue to be infringed by Intel;

(b) For an accounting of all damages sustained by Plaintiff as the result of Intel's acts of infringement;

(c) For enhanced damages pursuant to 35 U.S.C. § 284;

(d) For a mandatory future royalty payable on each and every product sold by Intel in the future that is found to infringe one or more of the patents-in-suit and on all future products which are not colorably different from products found to infringe;

(e) For an award of attorneys' fees pursuant to 35 U.S.C. § 285 or otherwise permitted by law;

(f) For costs of suit and interest; and

(g) For such other and further relief as the Court may deem just and proper.

**DEMAND FOR JURY TRIAL**

Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure and Local Rule CV-38,  
Plaintiff demands a trial by jury of this action.

Dated: October 2, 2017

Respectfully Submitted,

By: /s/ Henry Bunsow

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